

STATISTICS 1040
Quiz 1, Fall 2013

Name _____
Recitation Instructor _____ Time _____

1. A new medicine called FROVA has been approved for treatment of migraines. In a randomized, controlled, double-blind study of over 1000 migraine sufferers, 46% of the FROVA group experienced migraine relief whereas only 27% of the placebo group experienced migraine relief.

a) What is a *randomized, controlled* experiment? (2 points)

To make sure that the treatment group is like the control group, investigators put subjects into treatment or control at random; say by the toss of a coin.

b) What is a *placebo*? (1 points)

The control group is given a placebo which is neutral but resembles the treatment. This way the response should be due to the treatment itself and not the idea of treatment.

c) What does *double-blind* mean? (2 points)

The subjects do not know whether they are in the treatment group or the control group and neither do those who evaluate the responses. This prevents bias in the responses or in the evaluations.

d) Does FROVA work? (1 point)

Yes, a randomized, controlled, double-blind experiment is the gold-standard of statistical experiments and there is a significant difference between the two groups.

2. The following information came from FOX NEWS:

Drinking red wine not only reduces your risk for cardiovascular disease, but it may also reduce your risk for lung cancer, especially if you are a current or ex-smoker, Reuters reported Thursday. People who do or have smoked and drink at least one glass of wine each day are 60 percent less likely to develop lung cancer than those who have smoked and don't drink red wine.

a) Is this a controlled experiment or an observational study? Explain. (2 points)

This is an observational study because the investigators didn't decide who is in the control group or who is in the treatment group. The subjects have already decided.

b) Clearly explain how socioeconomic status could be a confounding factor in this study and why this might make you doubt their conclusion? (2 points)

Red wine is expensive. Wealthier people may be more likely to drink red wine and also avoid exposure to harmful chemicals such as asbestos and factory pollutants that may cause lung disease. Wealthier people may also be healthier to begin with.